TRANSACTIONS

OF THE

AMERICAN PHILOSOPHICAL SOCIETY.

ARTICLE I.

Astronomical Observations made at Hudson Observatory, Latitude 41° 14′ 42″.6, *north, and Longitude* 5*h*. 25*m*. 39*s*.5, *west. Third Series. By Elias Loomis, Professor of Mathematics and Natural Philosophy in the University of the City of New York. Read November* 15, 1844.

The general plan of observation has remained unchanged since the foundation of the observatory. The clock has not been stopped since January 31, 1840; but from the effects of dust and moisture, operating upon the pendulum and wheels, its rate has been somewhat affected, as will be seen from pages four to seven. The third spider line of the transit broke, April 20, 1841, and its place was supplied by the moveable micrometer line for a few days, until it could be replaced. July 14th, the fourth line broke, and the micrometer was substituted in its place. November 16th the micrometer broke; and December 28th, the second line also broke, leaving only three vertical lines. April 21, 1842, I undertook to replace all the lines, and, after some ineffectual attempts, succeeded in introducing fibres of silk from the cocoon. The lines, seven in number, were secured in their places by bees-wax, melted by a warm iron. These lines are a little coarser than the spider lines, are not quite so smooth, and are not perfectly straight. Nevertheless, by always observing transits on the same part of the lines, this last evil is mostly obviated. The equatorial intervals deduced from the transits of one hundred stars observed at all the wires, have been determined as follows:—

18.033; 18.537; 18.595; 19.123; 17.047; 18.679.

The intervals are quite unequal, but the reduction of the mean of all the wires to the central wire is no greater than when the instrument was first received, being 0s.107 × secant of the declination; positive above the pole, and negative below. I have therefore not attempted to change the position of the lines, as with a proper method of reduction the inequality of the intervals does not affect the accuracy of the observations. The pendulum of the clock appears to be somewhat under-compensated,—its daily rate being about one-second slower in summer than in winter.

I. LATITUDE OF HUDSON OBSERVATORY.

During the summer of 1841, I observed twenty-four culminations of Polaris; in 1842, fifteen culminations of Polaris, and four of β Ursæ Minoris; and in 1843, fifteen culminations of Polaris. They were all made in the usual way, alternately direct and by reflexion from mercury. The errors of the microscopes were found to be as follows:

	North Polar Distance.	A.	B.	C.	Mean.
1841, June,	358° 25′—30′	— 1″.5	+ 1″.3	+ 2″.2	+ 0″.67
	278 55—60	— 1 .9	+ 1 .1	+ 5 .0	+ 1 .40
July,	1 30—35	— 1 .6	+ 0 .2	+ 3 .1	+ 0 .56
	275 55—60	— 1 .9	+ 0 .3	+ 6 .0	+ 1 .47
1842, June,	358 25—30	— 0 .1	— 0 .4	+ 1 .0	+ 0 .20
	278 55—60	— 2 .1	+ 0 .5	+ 3 .3	+ 0 .58
July,	15 10—15	— 1 .7	+ 0 .8	+ 3 .3	+ 0 .82
	262 15—20	— 1 .9	+ 1 .0	+ 3 .3	+ 0 .80
1843, June,	358 25—30	— 0 .5	— 0 .2	+ 0 .7	+ 0 .00
	278 55—60	— 1 .6	+ 0 .7	+ 4 .1	+ 1 .10

The places of the stars are taken from the Nautical Almanac, and require corrections. In the Almanac for 1843, the declination of Polaris is corrected + 0″.50 to conform to the Greenwich observations, and in that for 1844, the correction is given + 0″.38. Accordingly, the declinations of the Almanac for 1841 and 1842 have been increased 0″.38, and those for 1843 diminished 0″.12. In the Almanac for 1842 the declination of β Ursæ Minoris is corrected — 0″.90, while the Almanac for 1844 gives the true correction — 0″.46. The declination for 1842 has accordingly been increased 0″.44.

The following are the results of the observations:

	Date.	Latitude.	No. of Obs.
Lower culmination of Polaris,	1841, May 14,	41° 14′ 44″.1	12
	15,	40 .7	9
	19,	42 .6	9
	20,	40 .8	9
	21,	39 .7	9
	27,	43 .7	9
	28,	42 .2	9
	29,	40 .3	9
	31,	42 .9	6
	June, 2,	40 .2	9
	3,	42 .5	9
	4,	43 .9	9
	5,	43 .0	9
	7,	43 .0	9
	8,	41 .7	5
	9,	40 .9	9

	Date.	Latitude.	No. of Obs.
	June 10,	41° 14′ 43″.5	9
	11,	42 .3	8
	14,	40 .9	9
	16,	42 .5	9
Upper culmination of Polaris,	July 20,	41 .5	6
	21,	42 .5	7
	22,	41 .8	9
	23,	43 .3	9
Lower culmination of Polaris,	1842, May 12,	40 .1	13
	13,	44 .0	9
	14,	44 .5	9
	16,	42 .4	8
	24,	42 .4	7
	27,	42 .0	7
	30,	42 .4	7
	31,	43 .1	9
	June 1,	44 .3	7
	4,	41 .0	8
	6,	43 .0	8
	11,	40 .9	10
	13,	42 .7	10
	15,	42 .7	8
	17,	42 .7	5
Upper culmination of β Ursæ Minoris,	July 2,	43 .3	4
	6,	41 .5	6
	9,	44 .8	6
	11,	44 .9	6
Lower culmination of Polaris,	1843, May 15,	44 .1	9
	18,	44 .0	6
	19,	43 .2	7
	20,	43 .5	8
	24,	44 .4	6
	27,	44 .2	11
	29,	44 .7	12
	31,	40 .9	8
	June 1,	40 .5	8
	8,	42 .3	10
	12,	42 .6	8
	13,	42 .2	8
	16,	43 .0	6
	17,	43 .0	7
	19,	42 .3	7
Mean of fifty-eight culminations, ...		41 14 42 .7	

The result here obtained accords very well with the observations of 1840. If we apply to that result the correction of the Nautical Almanac, 0″.38, and take the mean of the observations of 1840, 1, 2, and 3, we have from sixty-three culminations of Polaris and four of β Ursæ Minoris the latitude 41° 14′ 42″.6, which is my final result.

II. OBSERVED TRANSITS OF THE MOON AND MOON CULMINATING STARS AT HUDSON OBSERVATORY.

The following list is a continuation of that given on pages 143—145 of Second Series. The mode of reduction is explained on page 142.

No.	Date.	Star.	No. Wires Obs.	Meridian Transit.	Clock's rate.
	1841.				
	March 2	C. Tauri	5	5h.43m. 2s.50	— 2s.02
		$\varkappa$ Aurigæ	5	6 4 57 .30	
126		Moon 1 L.	5	6 50 16 .86	
		δ Geminorum	5	7 10 20 .12	
		α^2 Geminorum	5	7 24 10 .24	
	March 3	δ Geminorum	5	7 10 18 .84	— 1 .75
		α^2 Geminorum	5	7 24 8 .02	
127		Moon 1 L.	5	7 55 57 .10	
		λ Cancri	5	8 10 45 .58	
		θ Cancri	5	8 22 12 .68	
	Mar. 29	ζ Tauri	5	5 28 9 .52	— 1 .69
128		Moon 1 L.	5	6 30 52 .92	
	Mar. 30	ζ Geminorum	5	6 54 40 .66	— 1 .07
129		Moon 1 L.	5	7 35 0 .42	
		6 Cancri	5	7 53 45 .28	
130	April 1	Moon 1 L.	5	9 32 42 .92	— 1 .23
		α Leonis	5	9 59 53 .24	
	April 2	o Leonis	5	9 32 37 .20	— 1 .48
		α Leonis	5	9 59 51 .48	
131		Moon 1 L.	5	10 26 28 .92	
		χ Leonis	5	10 56 46 .86	
	April 3	48 Leonis	5	10 26 26 .46	— 1 .58
		χ Leonis	5	10 56 45 .28	
132		Moon 1 L.	5	11 18 4 .44	
		υ Leonis	5	11 28 45 .00	
		β Virginis	5	11 42 21 .26	
	April 27	α^2 Geminorum	5	7 23 47 .88	— 1 .59
		β Geminorum	5	7 34 55 .96	
133		Moon 1 L.	5	8 17 11 .92	
		δ Cancri	5	8 35 0 .26	
	April 28	δ Cancri	5	8 34 58 .94	— 1 .32
		α^2 Cancri	5	8 49 7 .56	
134		Moon 1 L.	5	9 14 50 .94	
		ξ Leonis	5	9 22 42 .84	
		o Leonis	5	9 32 0 .12	
	May 27	α Leonis	5	9 59 40 .10	— 1 .20
		ϱ Leonis	3	10 24 12 .64	
135		Moon 1 L.	5	10 44 54 .24	
136	May 28	Moon 1 L.	5	11 34 53 .44	— 1 .39
		β Virginis	5	11 42 10 .06	
	May 29	β Virginis	5	11 42 8 .86	— 1 .20
137		Moon 1 L.	5	12 24 0 .92	
		γ' Virginis	5	12 33 20 .84	
	June 2	ι' Libræ	2	15 2 50 .11	— 1 .35
		γ' Libræ	5	15 26 18 .68	
138		Moon 1 L.	5	15 51 32 .90	
		β' Scorpii	5	15 55 52 .88	
		α Scorpii	5	16 19 20 .62	
139	June 4	Moon 2 L.	5	17 45 53 .92	— 1 .94
		γ^2 Sagittarii	5	17 55 12 .70	
		μ Sagittarii	5	18 3 52 .28	
140	June 6	Moon 2 L.	5	19 33 55 .12	— 1 .81
		57 Sagittarii	5	19 42 30 .16	
		c Sagittarii	5	19 52 25 .40	
	June 28	λ Virginis	5	14 10 25 .04	— 1 .93
141		Moon 1 L	5	14 40 31 .14	
		20 Libræ	5	14 54 41 .20	
		ι' Libræ	5	15 3 4 .76	
	June 29	20 Libræ	5	14 54 39 .10	— 2 .06
		ι' Libræ	5	15 3 2 .74	

No.	Date.	Star.	No. Wires Obs.	Meridian Transit.	Clock's rate.
	1841.				
142		Moon 1 L.	4	15h.34m.10s.60	
		b Scorpii	5	15 41 18 .18	
		δ Scorpii	5	15 50 49 .14	
	June 30	δ Scorpii	5	15 50 47 .14	— 2 .00
143		Moon 1 L.	5	16 29 20 .98	
		25 Scorpii	4	16 36 58 .64	
144	July 3	Moon 2 L.	5	19 16 24 .26	— 1 .84
		h^2 Sagittarii	5	19 26 46 .42	
		57 Sagittarii	5	19 42 41 .52	
	July 26	α^2 Libræ	5	14 42 11 .36	— 2 .00
145		Moon 1 L.	5	15 17 0 .30	
		π Scorpii	5	15 49 21 .12	
	July 28	σ Scorpii	5	16 11 33 .94	— 2 .15
		α Scorpii	5	16 19 41 .68	
146		Moon 1 L.	5	17 7 33 .70	
		θ Ophiuchi	5	17 12 17 .52	
		3 Sagittarii	5	17 37 36 .16	
	July 29	θ Ophiuchi	5	17 12 14 .88	— 2 .84
		3 Sagittarii	5	17 37 33 .12	
147		Moon 1 L.	5	18 2 59 .38	
		μ' Sagittarii	2	18 4 14 .95	
		λ Sagittarii	5	18 18 9 .08	
	Aug. 1	c Sagittarii	5	19 52 45 .94	— 2 .21
		β^2 Capricorni	5	20 11 57 .68	
148		Moon 1 L.	5	20 38 50 .04	
		Moon 2 L.*	5	20 40 59 .06	
		μ Aquarii	5	20 43 56 .96	
		ν Aquarii	5	21 0 48 .26	
	Aug. 2	μ Aquarii	5	20 43 55 .48	— 1 .52
		ν Aquarii	5	21 0 46 .70	
149		Moon 2 L.	5	21 28 20 .78	
		γ Capricorni	5	21 31 7 .52	
		μ Capricorni	5	21 44 28 .16	
	Aug. 3	γ Capricorni	5	21 31 5 .72	— 1 .80
		μ Capricorni	5	21 44 26 .36	
150		Moon 2 L.	5	22 14 0 .30	
		η Aquarii	5	22 26 59 .46	
	Aug. 5	ι Piscium	5	23 31 31 .12	— 1 .78
151		Moon 2 L.	5	23 43 32 .94	
		ω Piscium	5	23 50 53 .66	
	Oct. 18	α Scorpii	5	16 19 29 .32	— 2 .04
152		Moon 1 L.	5	16 57 38 .68	
153	Oct. 25	Moon 1 L.	5	22 51 15 .92	— 1 .54
		β Piscium	5	22 55 26 .64	
		γ Piscium	5	23 8 34 .88	
	Oct. 26	β Piscium	5	22 55 25 .14	— 1 .55
		γ Piscium	5	23 8 33 .28	
154		Moon 1 L.	5	23 36 51 .06	
		ω Piscium.	5	23 50 46 .60	
	Oct. 27	ω Piscium.	5	23 50 44 .88	— 1 .72
155		Moon 1 L.	5	0 23 52 .02	
		δ Piscium.	5	0 40 2 .06	
	Nov. 22	λ Aquarii	4	22 44 19 .18	— 1 .27
		β Piscium	4	22 55 47 .13	
156		Moon 1 L.	4	23 16 30 .24	
		$\varkappa'$ Piscium	4	23 18 47 .18	
		ι Piscium	4	23 31 46 .56	
	Nov. 23	$\varkappa'$ Piscium	4	23 18 45 .50	— 1 .59
		ι Piscium	4	23 31 45 .06	
157		Moon 1 L.	4	0 2 10 .09	

* Slightly deficient.

No.	Date.	Star.	No. Wires Obs.	Meridian Transit.	Clock's rate.
	1841.				
	Nov. 23	d Piscium	4	0h.12m.24s.11	
	1842.				
	April 20	α Leonis	3	9 59 34 .36	— 2s.36
158		Moon 1 L	3	10 31 36 .90	
	April 21	34Sextantis	7	10 34 3 .04	— 2 .73
		d Leonis	7	10 51 59 .30	
159		Moon 1 L.	7	11 25 49 .51	
		v Leonis	4	11 28 27 .23	
		β Virginis	7	11 42 3 .53	
	April 24	α Virginis	7	13 16 13 .74	— 4 .17
		$\varkappa$ Virginis	7	13 40 39 .16	
160		Moon 1 L.*	7	14 13 37 .01	
		Moon 2 L.	7	14 15 59 .17	
		α^2 Libræ	7	14 41 30 .53	
		20Libræ	7	14 54 11 .59	
	April 28	e^2 Ophiuchi	7	17 20 51 .63	— 3 .83
		4 Sagittarii	7	17 49 13 .69	
161		Moon 2 L.	7	18 15 27 .14	
		λ Sagittarii	5	18 17 17 .86	
		σ Sagittarii	7	18 44 32 .03	
	May 20	η Virginis	5	12 11 42 .43	— 3 .07
162		Moon 1 L.	7	12 53 54 .86	
		α Virginis	7	13 16 45 .57	
	May 30	β Aquarii	7	21 22 35 .41	— 3 .09
		δ Capricorni	4	21 37 40 .20	
163		Moon 2 L.	7	22 5 56 .19	
164	June 13	Moon 1 L.	7	9 57 6 .89	— 2 .57
		α Leonis	7	9 59 35 .01	
165	June 17	Moon 1 L.	2	13 30 17 .36	— 2 .82
		$\varkappa$ Virginis.	5	13 40 44 .69	
166	June 19	Moon 1 L.	7	15 24 7 .19	— 3 .90
		b Scorpii	7	15 40 48 .49	
		δ Scorpii	7	15 50 19 .53	
	June 20	b Scorpii	7	15 40 44 .99	— 3 .28
		δ Scorpii	7	15 50 16 .46	
		α Scorpii	7	16 18 59 .67	
167		Moon 1 L.	7	16 23 34 .43	
	June 21	α Scorpii	4	16 18 55 .96	— 3 .71
		η Ophiuchi	7	17 0 31 .80	
168		Moon 1 L.	7	17 23 14 .86	
		3 Sagittarii	7	17 36 49 .36	
		4 Sagittarii	7	17 49 21 .14	
	June 24	h^2 Sagittarii	7	19 27 6 .60	— 3 .32
		57Sagittarii	7	19 43 2 .14	
169		Moon 2 L.	7	20 12 47 .16	
	June 28	λ Aquarii	4	22 44 8 .99	— 3 .78
170		Moon 2 L.	7	23 16 50 .90	
	July 15	α Virginis	7	13 16 36 .24	— 3 .39
171		Moon 1 L.	7	14 9 22 .84	
	July 16	α^2 Libræ	7	14 41 49 .80	— 3 .57
172		Moon 1 L.	7	15 6 21 .21	
		$\varkappa$ Libræ	7	15 32 32 .04	
		b Scorpii	7	15 41 10 .23	
173	July 17	Moon 1 L.	7	16 4 45 .57	— 3 .31
		σ Scorpii	7	16 11 13 .17	
		α Scorpii	7	16 19 21 .44	
	July 21	π Sagittarii	7	18 59 45 .80	— 3 .29
		h^2 Sagittarii	7	19 26 29 .80	
174		Moon 1 L.	7	19 51 8 .07	
		Moon 2 L.†	7	19 53 20 .74	
	1842.				
		α^2 Capricorni	7	20h. 8m.42s.03	
		ζ Capricorni	7	20 19 15 .34	
175	Aug. 13	Moon 1 L.	7	15 46 28 .59	— 2s.69
		β' Scorpii	7	15 55 38 .03	
		α Scorpii	7	16 19 6 .57	
	Aug. 16	γ^2 Sagittarii	5	17 54 54 .55	— 2 .74
		μ' Sagittarii	7	18 3 33 .86	
176		Moon 1 L.	7	18 40 13 .49	
		σ Sagittarii	7	18 44 43 .01	
		π Sagittarii	7	18 59 36 .49	
	Aug. 19	v Capricorni	7	20 30 8 .29	— 3 .43
		μ Aquarii	7	20 43 12 .66	
177		Moon 1 L	7	21 12 44 .71	
		β Aquarii	7	21 22 19 .27	
	Aug. 20	ι Capricorni	7	21 13 28 .07	— 3 .74
		β Aquarii	7	21 23 15 .53	
178		Moon 1 L.	7	21 59 34 .70	
		Moon 2 L.‡	7	22 1 38 .09	
		θ Aquarii	7	22 8 30 .87	
		ζ Aquarii	7	22 20 42 .67	
	Aug. 21	θ Aquarii	4	22 8 28 .35	— 2 .51
		ζ Aquarii	7	22 20 40 .17	
179		Moon 2 L.	7	22 46 0 .97	
		β Piscium	7	22 55 48 .49	
	Aug. 22	β Piscium	7	22 55 45 .47	— 3 .02
180		Moon 2 L.	7	23 29 50 .54	
		ω Piscium	7	23 51 7 .04	
	Aug. 23	ι Piscium	7	23 31 42 .39	— 2 .31
		ω Piscium	7	23 51 4 .73	
181		Moon 2 L	7	0 14 0 .66	
	Aug. 27	δ Arietis	7	3 2 17 .04	— 2 .79
182		Moon 2 L.	3	3 31 48 .89	
	Aug. 28	η Tauri	7	3 37 43 .31	— 3 .48
		A' Tauri	6	3 54 59 .10	
183		Moon 2 L.§	4	4 29 38 .52	
	Sept. 12	4 Sagittarii	7	17 50 2 .39	— 3 .17
184		Moon 1 L.	7	18 23 0 .41	
		σ Sagittarii	7	18 45 21 .16	
		o Sagittarii	7	18 55 5 .83	
	Sept. 13	σ Sagittarii	7	18 45 17 .99	— 2 .94
		o Sagittarii	7	18 55 3 .11	
185		Moon 1 L.	7	19 17 46 .03	
		h^2 Sagittarii	7	19 26 55 .56	
	Sept. 16	ζ Capricorni	7	21 6 42 .06	— 2 .71
		β Aquarii	7	21 22 56 .69	
186		Moon 1 L.	7	21 44 28 .64	
		ι Aquarii	7	21 57 36 .60	
		θ Aquarii	3	22 8 12 .38	
	Sept. 17	ι Aquarii	1	21 57 34 .21	— 2 .43
		θ Aquarii	7	22 8 9 .90	
187		Moon 1 L.	7	22 29 15 .06	
	Sept. 18	$\varkappa^2$ Piscium	1	22 52 9 .29	— 2 .34
188		Moon 1 L.	7	23 13 16 .57	
		$\varkappa'$ Piscium	4	23 18 27 .73	
		ι Piscium	4	23 31 27 .25	
	Sept. 19	$\varkappa'$ Piscium	7	23 18 25 .21	— 2 .50
		ι Piscium	7	23 31 24 .77	
189		Moon 2 L.	7	23 59 28 .09	
		d Piscium	7	0 12 3 .70	
	Sept. 23	ν Arietis	7	2 29 20 .09	— 1 .60

* Somewhat deficient. † Slightly deficient. ‡ Both limbs apparently full. § Indistinctly seen through a haze.

No.	Date.	Star.	No. Wires Obs.	Meridian Transit.	Clock's rate.
	1842.				
		ε Arietis	7	2h.49m.40s.10	
190		Moon 2 L.	7	3 13 59 .60	
		η Tauri	7	3 37 34 .60	
	Sept. 24	g Arietis*	7	3 14 25 .09	—1s.73
		η Tauri	7	3 37 32 .87	
191		Moon 2 L.	7	4 9 52 .89	
		ν' Tauri	7	4 16 17 .90	
		τ Tauri	7	4 32 12 .61	
	Sept. 26	β Tauri	7	5 15 40 .64	— 2 .14
		B Tauri	7	5 38 41 .04	
192		Moon 2 L.	7	6 8 52 .04	
		μ Geminorum	7	6 12 45 .50	
		ε Geminorum	7	6 33 33 .69	
	Sept. 27	μ Geminorum	4	6 12 43 .24	— 2 .26
193		Moon 2 L.	7	7 9 39 .49	
		β Geminorum	7	7 34 57 .03	
	Sept. 28	β Geminorum	5	7 34 54 .78	— 2 .25
194		Moon 2 L.	7	8 9 42 .16	
195	Oct. 10	Moon 1 L.	7	18 58 6 .97	— 1 .74
		π Sagittarii	6	19 0 17 .59	
		h^2 Sagittarii	7	19 27 0 .84	
	Oct. 11	π Sagittarii	7	19 0 16 .13	— 1 .45
		h^2 Sagittarii	7	19 26 59 .40	
196		Moon 1 L.	7	19 51 32 .04	
		β^2 Capricorni	7	20 12 1 .97	
		ξ Capricorni	7	20 19 44 .89	
	Oct. 12	β^2 Capricorni	7	20 12 0 .24	— 1 .69
		ξ Capricorni	7	20 19 43 .24	
197		Moon 1 L.	7	20 41 32 .41	
		θ Capricorni	7	20 56 56 .31	
		ζ Capricorni	7	21 6 52 .64	
	Oct. 13	θ Capricorni	7	20 56 54 .87	— 1 .67
		ζ Capricorni	7	21 6 50 .74	
198		Moon 1 L.	7	21 28 45 .56	
		μ Capricorni	7	21 44 31 .73	
	Oct. 15	γ Aquarii	7	22 13 17 .63	— 1 .50
		η Aquarii	7	22 27 2 .49	
199		Moon 1 L.	7	22 58 14 .21	
		γ Piscium	7	23 8 46 .63	
		$\varkappa'$ Piscium	7	23 18 37 .99	
	Oct. 16	γ Piscium	7	23 8 44 .77	— 1 .84
		$\varkappa'$ Piscium	7	23 18 36 .17	
200		Moon 1 L.	7	23 42 21 .96	
		ω Piscium	7	23 50 57 .89	
	Oct. 23	ι Tauri	7	4 53 14 .63	— 1 .46
		β Tauri	7	5 15 54 .57	
201		Moon 2 L.	7	5 50 25 .01	
		H Geminorum	7	5 54 6 .04	
		μ Geminorum	7	6 12 58 .90	
	Oct. 25	ζ Geminorum	6	6 54 15 .43	— 1 .77
		δ Geminorum	7	7 10 12 .24	
202		Moon 2 L.	7	7 49 9 .80	
		μ' Cancri	7	7 56 27 .00	
		θ Cancri	7	8 22 4 .99	
	Oct. 26	μ' Cancri	7	7 56 25 .63	— 1 .71
		θ Cancri	7	8 22 2 .93	
203		Moon 2 L.	7	8 46 31 .41	
		α^2 Cancri	7	8 49 18 .46	
	Oct. 27	α^2 Cancri	7	8 49 16 .73	— 1 .73
204		Moon 2 L.	7	9 42 21 .46	
		α Leonis	7	9h.59m.22s.96	
	Nov. 13	ι Piscium	7	23 31 44 .99	—1s.93
		ω Piscium	7	23 51 7 .81	
205		Moon 1 L.	7	0 10 1 .96	
	Nov. 24	o Leonis	5	9 32 19 .24	— 1 .62
		π Leonis	7	9 51 27 .77	
206		Moon 2 L.	7	10 18 58 .06	
	Nov. 25	ξ Leonis	7	10 24 3 .44	— 1 .72
		34 Sextantis	7	10 34 1 .43	
207		Moon 2 L.	7	11 12 12 .93	
	Dec. 12	δ Piscium	5	0 39 37 .20	— 1 .33
		ε Piscium	7	0 53 53 .20	
208		Moon 1 L.	7	1 22 36 .04	
		β Arietis	1	1 45 3 .01	
	Dec. 17	β Tauri	7	5 16 21 .89	— 1 .49
		ζ Tauri	7	5 28 15 .11	
209		Moon 2 L.	7	6 8 42 .69	
		μ Geminorum	7	6 13 27 .03	
		ε Geminorum	7	6 34 15 .49	
	Dec. 23	p^4 Leonis	7	11 5 35 .09	— 1 .07
		e Leonis	7	11 22 9 .10	
210		Moon 2 L.	7	11 49 41 .99	
		η Virginis	7	12 11 43 .51	
	1843.				
	Jan. 9	η Piscium	7	1 22 35 .39	— 1 .08
211		Moon 1 L.	7	1 50 22 .66	
	Jan. 21	ψ Virginis	7	12 45 26 .01	— 1 .56
212		Moon 2 L.†	5	13 21 36 .65	
	Jan. 24	δ Scorpii	7	15 50 11 .59	— 2 .33
213		Moon 2 L.	7	16 17 55 .00	
		α Scorpii	3	16 18 55 .21	
	Jan. 25	α Scorpii	7	16 18 53 .40	— 1 .81
214		Moon 2 L.	7	17 18 23 .99	
	Feb. 9	ν' Tauri	7	4 16 43 .63	— 1 .13
		τ Tauri	7	4 32 38 .30	
215		Moon 1 L.	7	5 6 2 .50	
		β Tauri	7	5 16 11 .04	
		ζ Tauri	7	5 28 4 .50	
	Mar. 11	g Geminorum	7	7 36 20 .96	— 1 .37
216		Moon 1 L.	7	7 38 30 .10	
		ζ Cancri	7	8 2 31 .19	
	Mar. 13	α^2 Cancri	7	8 49 10 .60	— 1 .15
		$\varkappa$ Cancri	7	8 58 31 .27	
217		Moon 1 L.	7	9 35 43 .60	
218	April 7	Moon 1 L.	7	7 14 47 .81	— 2 .72
		$\varkappa$ Geminorum	7	7 34 27 .11	
	April 10	α Leonis	7	9 59 23 .43	— 2 .11
219		Moon 1 L.	7	10 4 28 .19	
		ξ Leonis	7	10 23 56 .10	
	April 11	α Leonis	7	9 59 21 .24	— 2 .19
220		Moon 1 L.	7	11 0 31 .11	
	April 12	τ Leonis	7	11 19 10 .90	— 1 .77
		υ Leonis	7	11 28 13 .49	
221		Moon 1 L.	7	11 57 33 .93	
		η Virginis	7	12 11 11 .86	
		q Virginis	7	12 25 0 .07	
	May 11	q Virginis	7	12 25 51 .77	— 3 .08
		ψ Virginis	7	12 46 22 .93	
222		Moon 1 L.	7	13 27 10 .60	
		x Virginis	7	13 41 32 .26	

* Indistinctly seen.

† Seen through flying clouds.

No.	Date.	Star.	No. Wires Obs.	Meridian Transit.	Clock's rate.
	1843.				
	June 8	53 Virginis	7	13h. 3m.40s.71	—2s.71
		α Virginis	7	13 16 53 .66	
223		Moon 1 L.	7	14 1 19 .60	
		λ Virginis	7	14 10 35 .73	
	June 11	α Scorpii	7	16 19 37 .71	— 2 .79
		τ Scorpii	7	16 25 57 .77	
224		Moon 1 L.	7	17 12 36 .77	
		Moon 2 L.*	7	17 15 5 .30	
	June 17	30 Aquarii	7	21 54 34 .50	— 2 .63
		γ Aquarii	7	22 13 6 .21	
225		Moon 2 L.	7	22 41 59 .19	
	July 2	α Leonis	6	9 59 48 .38	— 3 .32
226		Moon 1 L.	7	10 56 33 .17	
	July 7	20 Libræ	7	14 54 31 .40	— 2 .24
227		Moon 1 L.	7	15 42 4 .49	
		β′ Scorpii	7	15 55 56 .97	
		α Scorpii	7	16 19 25 .61	
	July 8	α Scorpii	7	16 19 22 .77	— 2 .84
228		Moon 1 L	7	16 45 28 .39	
		η Ophiuchi	7	17 0 57 .69	
		θ Ophiuchi	7	17 11 57 .30	
229	July 16	Moon 2 L.	7	23 53 11 .96	— 2 .32
		E Piscium	7	0 1 12 .06	
230	July 21	Moon 2 L.	7	3 59 22 .76	— 2 .39
		α Tauri	7	4 26 56 .09	
231	Aug. 3	Moon 1 L.	7	15 22 40 .96	— 1 .92
		δ Scorpii	7	15 50 33 .84	
232	Aug. 5	Moon 1 L.	7	17 26 52 .56	— 1 .95
		4 Sagittarii	7	17 49 39 .34	
233	Aug. 14	Moon 2 L.	7	1 7 22 .96	— 3 .17
		η Piscium	7	1 23 2 .06	
234	Aug. 15	Moon 2 L.	7	1 54 48 .84	— 2 .89
		θ′ Arietis	7	2 9 17 .93	
		♆ Arietis	7	2 22 6 .16	
235	Sept. 15	Moon 2 L.	7	5 3 43 .17	— 2 .99
		β Tauri	7	5 15 43 .27	
		ζ Tauri	7	5 27 36 .74	
	Sept. 16	β Tauri	7	5 15 40 .10	— 3 .22
		ζ Tauri	7	5 27 33 .47	
236		Moon 2 L.	7	5 59 52 .50	
		μ Geminorum	7	6 12 45 .27	
237	Sept. 29	Moon 1 L.	7	17 50 5 .64	— 2 .81
		μ′ Sagittarii	6	18 3 59 .67	
		λ Sagittarii	7	18 17 54 .11	
238	Oct. 2	Moon 1 L.	7	20 38 59 .47	— 2 .88
		μ Aquarii	3	20 43 39 .72	
239	Oct. 3	Moon 1 L.	7	21 28 34 .09	— 2 .18
		δ Capricorni	5	21 37 50 .38	
		30 Aquarii	7	21 54 28 .79	
240	Oct. 4	Moon 1 L.	7	22 15 49 .04	— 1 .79
		γ Piscium	7	23 8 28 .17	
		x′ Piscium	7	23 18 19 .61	
	Oct. 5	γ Aquarii	7	22 12 57 .21	— 1 .75
		η Aquarii	7	22 26 41 .69	
241		Moon 1 L.	7	23 1 38 .30	
		γ Piscium	7	23 8 26 .44	
		x′ Piscium	7	23 18 17 .83	
	Oct. 10	ν Arietis	7	2 29 3 .99	— 3 .03
242		Moon 2 L.	7	2 58 46 .21	
	1843.				
		δ Arietis	2	3h. 1m.48s.92	
		g Arietis	7	3 14 12 .37	
	Oct. 16	x Geminorum	5	7 34 44 .79	— 3 .15
243		Moon 2 L.	7	8 25 36 .39	
	Oct. 30	ν Capricorni	7	20 30 14 .41	— 2 .89
		μ Aquarii	7	20 43 18 .69	
244		Moon 1 L.	7	21 12 6 .66	
		β Aquarii	7	21 22 25 .37	
		λ Capricorni	7	21 37 13 .21	
	Oct. 31	β Aquarii	5	21 22 23 .09	— 2 .26
		λ Capricorni	7	21 37 10 .96	
245		Moon 1 L.	7	22 0 17 .71	
		θ Aquarii	7	22 7 38 .99	
		ζ Aquarii	7	22 19 51 .10	
	Dec. 3	β Arietis	7	1 45 39 .24	— 2 .04
246		Moon 1 L.	7	2 23 3 .99	
		ν Arietis	7	2 29 35 .26	
	Dec. 4	ν Arietis	2	2 29 34 .21	— 2 .19
		ε Arietis	7	2 49 53 .57	
247		Moon 1 L.	7	3 13 58 .26	
248	Dec. 13	Moon 2 L.	7	11 18 51 .17	— 2 .10
		e Leonis	7	11 21 33 .37	
		β Virginis	7	11 41 46 .54	
	1844.				
249	Jan. 27	Moon 1 L.	7	2 33 36 .29	— 1 .99
		ε Arietis	7	2 50 19 .61	
		δ Arietis	7	3 2 44 .63	
250	Feb. 10	Moon 2 L.	7	15 30 9 .96	— 1 .93
		δ Scorpii	7	15 50 44 .10	
		β′ Scorpii	7	15 55 59 .40	
251	Feb. 24	Moon 1 L.	6	2 2 39 .40	— 2 .28
		α Persei	7	3 12 22 .01	
	Feb. 27	β Tauri	7	5 15 29 .46	— 2 .01
252		Moon 1 L.	7	5 42 16 .70	
		η Geminorum	7	6 4 31 .44	
		μ Geminorum	7	6 12 35 .01	
	Mar. 10	θ Ophiuchi	7	17 12 2 .50	— 2 .75
253		Moon 2 L.	7	17 17 19 .73	
254	May 23	Moon 1 L.	5	9 7 35 .41	— 2 .08
		α Hydrae	3	9 19 54 .51	
	May 27	β Virginis	7	11 42 19 .39	— 3 .02
		η Virginis	2	12 11 40 .33	
255		Moon 1 L.	7	12 37 4 .16	
	May 28	♆ Virginis	7	12 45 56 .89	— 3 .06
		53 Virginis	6	13 3 28 .11	
256		Moon 1 L.	7	13 35 33 .07	
		x Virginis	7	13 41 6 .61	
257	June 24	Moon 1 L.	7	13 11 4 .19	— 2 .60
		α Virginis	7	13 16 29 .56	
258	July 23	Moon 1 L.	7	14 49 5 .30	— 2 .03
		β Libræ	2	15 7 59 .45	
		α Serpentis	7	15 35 57 .00	
	July 24	δ Scorpii	4	15 50 27 .69	— 2 .39
259		Moon 1 L.	7	15 51 43 .77	
		β′ Scorpii	7	15 55 43 .03	
		α Scorpii	7	16 19 12 .53	
	Aug. 4	β Arietis	7	1 45 58 .97	— 2 .00
		α Arietis	7	1 58 20 .44	
260		Moon 2 L.	7	2 8 57 .04	

* Slightly deficient.

III. OBSERVED OCCULTATIONS OF FIXED STARS AT HUDSON OBSERVATORY.

No.	Date.	Star.	Immersion. Sidereal Time.	Emersion. Sidereal Time.	Remarks.
1	1841, June 2,	π Scorpii	12h.43m.28s.32	14h. 1m.20s.90	Im. pretty good obs.; Em. tolerable obs.
2	1842, June 20,	α Scorpii	12 57 17 .82	13 22 16 .89	Im. and Em. both good.

IV. LONGITUDE OF HUDSON OBSERVATORY.

Having obtained a few corresponding observations of the moon from European observatories, I have derived some determinations of my longitude. The results are exhibited in the following tables.

GREENWICH AND HUDSON.

MOON'S *FIRST* LIMB.

Date.	Observed increase of A. R.	Computed Longitude.	Date.	Observed increase of A. R.	Computed Longitude.
1839, Jan. 24,	14m. 4s.47	5h.25m.44s.7	1840, April 13,	10m.23s.62	5h.25m.41s.2
March 23,	13 5 .77	27 .7	15,	10 24 .54	46 .9
24,	12 5 .31	29 .3	June 8,	10 17 .12	48 .5
25,	11 10 .57	36 .0	13,	12 20 .69	40 .8
27,	9 58 .79	36 .7	July 9,	11 43 .19	44 .1
April 20,	12 37 .40	39 .7	13,	12 23 .70	29 .7
24,	9 45 .90	49 .8	August 4,	11 8 .95	33 .5
25,	9 41 .75	40 .1	5,	11 36 .33	40 .0
26,	9 52 .07	30 .1	8,	12 38 .03	52 .6
May 25,	10 40 .19	35 .1	September 6,	12 17 .95	41 .3
26,	11 22 .93	33 .3	7,	11 55 .40	46 .3
June 24,	12 42 .52	49 .8	October 6,	11 13 .38	42 .0
July 22,	13 5 .56	52 .2	7,	11 3 .42	41 .5
24,	13 33 .39	36 .9	November 2,	11 6 .46	37 .9
25,	13 12 .95	29 .7	3,	10 52 .22	46 .3
August 20,	13 30 .53	48 .2	December 2,	10 36 .69	32 .0
21,	13 23 .44	36 .0	1841, April 2,	11 55 .91	38 .6
23,	12 31 .57	39 .9	3,	11 32 .68	29 .8
October 14,	12 55 .88	48 .3	27,	13 38 .25	40 .0
15,	12 45 .20	43 .7	28,	12 40 .91	42 .1
16,	12 25 .90	45 .1	May 27,	11 34 .32	47 .4
November 16,	11 41 .69	43 .3	28,	11 11 .55	48 .5
18,	13 7 .59	36 .7	June 30,	12 35 .17	48 .8
19,	14 14 .89	27 .1	July 26,	12 14 .82	40 .3
1840, March 13,	13 10 .95	38 .0	28,	12 36 .77	35 .6
April 8,	14 32 .99	39 .3	October 25,	10 13 .69	32 .7
11,	11 25 .72	28 .5			

Mean of fifty-three determinations from moon's first limb, 5h. 25m. 39s.9. Mean difference, ± 5s.6. Probable error, ± 0s.65.

MOON'S *SECOND* LIMB.

1839, July 28,	11m.43s.49	5h.25m.44s.2	1840, Sept. 13,	12 4 .58	5h.25m.41s.6
August 2,	13 50 .37	42 .1	17,	15 7 .98	46 .4
25,	11 54 .67	50 .8	October 12,	13 54 .71	35 .6
October 24,	15 29 .07	34 .3	13,	14 50 .46	28 .9
November 22,	15 53 .16	31 .9	November 10,	15 43 .89	44 .3
1840, April 19,	12 13 .26	50 .6	16,	11 11 .17	42 .9
July 15,	11 28 .63	46 .7	1841, June 4,	12 39 .28	47 .7
16,	11 2 .48	41 .8	6,	11 46 .17	39 .7
August 4,	10 51 .92	40 .0	July 3,	11 56 .99	48 .5
September 12,	11 28 .00	40 .0			

Mean of nineteen determinations from moon's second limb, 5h. 25m. 42s.0. Mean difference ± 4s.7. Probable error, ± 0.92.

Mean of seventy-two determinations from both limbs, allowing double weight to the observations of the first limb, 5h. 25m. 40s.6.

CAMBRIDGE AND HUDSON.

MOON'S *FIRST* LIMB.

Date.	Observed increase of A. R.	Computed Longitude.	Date.	Observed increase of A. R.	Computed Longitude.
1838, Nov. 29,	13m.49s.80	5h.25m.65s.9	1839, June 24,	12m.43s.44	5h.25m.73s.5
1839, Jan. 24,	14 5 .29	63 .9	July 18,	10 7 .18	50 .5
Feb. 19,	13 21 .47	56 .2	22,	13 6 .54	76 .7
21,	14 19 .39	52 .9	August 20,	13 31 .28	66 .4
March 24,	12 6 .33	56 .6	21,	13 24 .32	57 .3
25,	11 11 .72	69 .5	22,	13 1 .07	52 .2
27,	9 59 .35	55 .0	23,	12 32 .72	69 .7
April 19,	13 47 .26	61 .7	October 14,	12 56 .68	68 .5
20,	12 38 .50	67 .9	15,	12 46 .23	70 .0
21,	11 33 .50	64 .2	16,	12 26 .82	69 .2
24,	9 46 .50	69 .7	18,	11 55 .69	73 .7
25,	9 42 .28	57 .9	20,	12 16 .50	58 .9
27,	10 17 .24	67 .9	November 16,	11 42 .63	69 .6
May 25,	10 40 .82	54 .4	18,	13 8 .46	58 .5
26,	11 23 .66	54 .3			

Mean of twenty-nine determinations from moon's *first* limb, 5h. 26m. 32s. Mean difference, ± 6s.6. Probable error, ± 1s.0.

MOON'S *SECOND* LIMB.

1839, August 2,	13m.51s.18	5h.25m.62s.1	October 24,	15m.30s.45	5h.25m.63s.9
25,	11 55 .11	62 .8	November 22,	15 54 .44	57 .8

Mean of four determinations from moon's second limb, 5h.26m.1s.7. Mean difference ±1s.9. Probable error, ±0.8.

Mean of thirty-three determinations from both limbs, allowing double weight to the first limb, 5h. 26m. 2s. 7.

Longitude of Cambridge, — 23s.5. Longitude of Hudson, from Greenwich, 5h. 25m. 39s.2.

OXFORD AND HUDSON.

MOON'S *FIRST* LIMB.

1840, April 9,	13m.15s.90	5h.20m.40s.9	October 7,	10m.52s.84	5h.20m.30s.0
June 8,	10 7 .63	48 .0	November 2,	10 55 .81	26 .7
13,	12 9 .30	39 .3	6,	11 27 .08	34 .1
July 13,	12 12 .16	27 .4	*9,	14 34 .28	25 .2
August 8,	12 25 .86	38 .8	December 1,	10 21 .63	24 .0
September 7,	11 43 .90	33 .3	2,	10 26 .76	26 .9
October 6,	11 2 .62	30 .7			

Mean of 13 determinations from moon's *first* limb, 5h. 20m. 32s.7. Mean difference, ±5s.9. Probable error ±1s.4.

MOON'S *SECOND* LIMB.

1840, July 15,	11m.17s.68	5h.20m.37s.4	November 9,	14m.36s.88	5h.20m.52s.0
August 14,	10 42 .12	46 .3	10,	15 29 .47	44 .5
October 12,	13 42 .08	37 .6			

Mean of 5 determinations from moon's second limb, 5h.20m.43s.5. Mean difference, ±4s.9. Probable error, ±1s.9.

Mean of eighteen determinations from both limbs, 5h. 20m. 36s.3.

Longitude of Oxford, + 5m. 1s.5. Longitude of Hudson, from Greenwich, 5h. 25m. 37s.8.

* The correction for defective illumination of the moon's first limb is — 0s.29, computed from the formula, moon's radius × versed sine of θ; where θ is the difference of A. R. of the sun and moon, diminished by 12h., and multiplied by the cosine of the sun's declination.

EDINBURGH AND HUDSON.

MOON'S *FIRST* LIMB.

Date.	Observed increase of A. R.	Computed Longitude.	Date.	Observed increase of A. R.	Computed Longitude.
1838, Sept. 29,	12m.54s.61	5h.12m.44s.5	1839, April 24,	9m.22s.72	5h.12m.54s.5
October 1,	12 7 .75	49 .5	26,	9 29 .67	65 .2
27,	12 10 .52	60 .9	27,	9 52 .67	61 .0
November, 29,	13 16 .35	48 .6	May 25,	10 15 .13	44 .0
1839, Jan. 24,	13 13 .41	53 .0	June 20,	9 37 .27	60 .0
February, 19,	12 49 .33	44 .6	August 20,	12 58 .66	56 .1
March 22,	13 27 .34	49 .8	October 17,	11 37 .59	48 .9
23,	12 34 .94	44 .7	18,	11 27 .00	66 .1
24,	11 36 .82	45 .5	20,	11 46 .87	45 .2
25,	10 44 .29	53 .0	November 16,	11 14 .42	57 .8
April 18,	14 9 .10	59 .6	17,	11 45 .73	45 .0
19,	13 13 .75	52 .8	19,	13 42 .22	50 .6
21,	11 5 .21	50 .0			

Mean of 25 determinations from moon's first limb, 5h. 12m. 52s.4. Mean difference, ±5s.7. Probable error, ±1s.0.

MOON'S *SECOND* LIMB.

1839, July 4,	12m. 0s.02	5h.13m. 3s.2	1839, Aug. 2,	13m.18s.33	5h.13m. 5s.9

Mean of two determinations from moon's second limb, 5h.13m.4s.5. Mean difference, ±1s.3. Probable error ±0.8.

Mean of twenty-seven determinations from both limbs, 5h. 12m. 56s.4.

Longitude of Edinburgh, + 12m. 43s.0. Longitude of Hudson, from Greenwich, 5h. 25m. 39s. 4.

RESULTS.

Longitude of Hudson, from	72	Greenwich	observations,	5h. 25m. 40s.6
"	"	33	Cambridge "	39 .2
"	"	18	Oxford "	37 .8
"	"	27	Edinburgh "	39 .4

Mean of one hundred and fifty determinations, allowing double weight to the Greenwich observations, 5h. 25m. 39s.5.

When all the European observations up to the present time have been published, we may expect to obtain many new determinations of longitude. At present, I assume, for the position of Hudson observatory, Northern Latitude, 41° 14′ 42″.6; Western Longitude, from Greenwich, 5h. 25m. 39s.5.

The transit instrument is 1399 feet north, and 919 feet east of what is reported to be the centre of Hudson township. We have, then, for the centre of the township, North Latitude, 41° 14′ 28″.9; West Longitude, 5h. 25m. 38s.7, a result of some importance to geography, and differs sensibly from the position assigned on most maps.

V. OBSERVATIONS OF COMETS.

1. *Encke's Comet.*

Encke's comet was observed in 1842, on the evenings of March 28, 30, 31; April 1, 4, 5, 7, 9, and 11. The mode of observation consisted in observing the times of ingress and egress of the comet, and one or more stars of comparison. For this purpose, I employed a positive eye-piece, with a magnifying power of fifty-eight, having five parallel and equidistant spider lines, crossed by as many others at right angles. The diameter of the

field was determined to be 1976″.65. The same eye-piece has been employed in all the cometary observations.

The following table shows the true right ascensions and declinations of the stars of comparison for the dates of observation, according to several authorities. Lalande's observations are found in the Histoire Celeste, pp. 34, 38, 192 and 194. Bessel's are from Zones 332, 394, and 506. I have also observed all the stars on the meridian with the transit circle, most of them repeatedly, and the results are given below. The numbers contained in the last column, are the places actually employed in reducing the observations of the comet.

	RIGHT ASCENSION.								DECLINATION.						
	Mag'e.	Lalande.		Bessel.	Piazzi.	Ast. Cat.	Loomis.	Mean.		Lalande.	Bessel.	Piazzi.	Ast. Cat.	Loomis.	Mean.
a	7	1*h*.48*m*.44*s*.17		44*s*.68	44*s*.17	44*s*.11	44*s*.34	44*s*.28	*a'*	+17° 2′42″.2	43″.6	42″.8	42″.6	45″.8	43″.4
b	8	1 49	25 .73	25 .92		{ 44 .24 }	25 .52	25 .72	*b'*	16 45 67 .0	61 .5		{ 43″.6 }	58 .3	62 .3
c	8	1 59	6 .53	6 .72	6 .34	{ Pond. }	7 .33	6 .73	*c'*	17 16 32 .8	30 .1	30 .6	{ Pond. }	31 .0	31 .1
d	7.8	2 9	1 .43				1 .83	1 .63	*d'*	17 43 14 .6				11 .5	13 .0
e	8	2 14	17 .00	17 .44			17 .08	17 .17	*e'*	16 52 33 .4	30 .9			30 .2	31 .5
f	6	2 22	9 .72	9 .67	9 .23	9 .32	9 .83	9 .55	*f'*	17 0 13 .6	12 .9	14 .0	17 .0		13 .5
g	8	2 31	24 .79	24 .95			24 .89	24 .88	*g'*	16 2 49 .3	42 .1			36 .3	42 .6
h	6.7	2 35	51 .61		51 .10	51 .17	51 .90	51 .44	*h'*	14 38 24 .7		28 .9	30 .2	21 .6	26 .3

The observations were corrected for the *difference* of refraction between the comet and star of comparison, by means of the formulæ

$$\text{Correction in A. R.} = 2\, r\, \Delta \sin v \cos v \sec \delta$$

$$\text{Correction in Dec.} = r\, \Delta \cos^2 v$$

Where r = the difference of refraction for 1′ at the given altitude.

Δ = the difference of declination of the two objects.

v = the angle of variation.

δ = the mean of the declinations of the star and comet.

The places in column fifth are corrected for refraction, parallax and aberration, and the last column exhibits the corrections of Encke's ephemeris according to the observations.

Date.	Differences observed.	Sidereal Time.	No. of Obs.	Comet's Places.	Correction of Ephemeris.	
					A.R.	Dec.
1842, March 28,	Comet—*a* = 1*m*.28*s*.37	8*h*.14*m*.18*s*.77	8	27°33′28″.5	+21″.7	
	Comet—*b* = 44 .71	8 17 7 .26	7	33 12 .2		
	a'—Comet = 8′58″.0	8 14 18 .77	8	+16 53 49 .6		
	Comet—*b'* = 7 25 .3	8 17 7 .26	7	53 38 .9		—22″.3
March 30,	*c*—Comet = 1*m*.39*s*.00	8 20 5 .57	3	29 22 5 .7	+21 .0	
	c'—Comet = 8′17″.3	8 20 5 .57	3	+17 8 18 .2		—12 .1
March 31,	Comet—*c* = 1*m*.58*s*.23	8 26 30 .20	11	30 16 37 .8	+26 .0	
	c'—Comet = 3′22″.9	8 33 17 .74	8	+17 13 12 .9		—19 .1
April 1,	*d*—Comet = 4*m*.22*s*.58	8 25 17 .51	6	31 9 50 .2	— 2 .9	
	d'—Comet = 26′46″.6	8 25 17 .51	6	+17 16 23 .2		—20 .1
April 4,	Comet—*e* = 38*s*.27	8 36 48 .57	8	33 44 31 .8	+11 .8	
	Comet—*e'* = 19′28″.4	8 36 48 .57	8	+17 12 10 .4		—22 .6
April 5,	*f*—Comet = 4*m*. 5*s*.5	8 38 21 .26	7	34 31 26 .7	— 2 .1	
	Comet—*f'* = 4′46″.3	8 45 23 .43	5	+17 5 4 .3		—13 .5
April 7,	Comet—*f* = 1*m*.30*s*.8	8 44 14 .39	5	35 55 12 .8	+ 0 .1	
	f'—Comet = 21′ 3″.4	8 44 14 .39	5	+16 39 5 .8		—40 .5
April 9,	*g*—Comet = 3*m*.32*s*.37	8 56 17 .57	2	36 58 15 .4	—33 .4	
	g'—Comet = 7′ 5″.7	8 56 17 .57	2	+15 55 32 .1		—50 .4
April 11,	*h*—Comet = 5*m*.38*s*.83	9 3 1 .00	3	37 33 42 .1	—70 .7	

2. *The Great Comet of* 1843.

Owing to an extraordinary degree of cloudy weather, I made but few observations of this comet. They were all made in the mode described for Encke's comet, with the exception of that of March 11th, when the head having been discovered only a few minutes before its setting, it was brought as near as could be estimated by the eye, into the centre of the field, and the circles were read off. This was done four times, when the comet disappeared behind the trees. A star of the sixth magnitude, having nearly the same declination, was then observed repeatedly, in the same way. The following is a list of all the stars used in the series.

	Mag'e.	Lalande.	Bessel.	Ast. Cat.	Result employed.		Lalandi.	Bessel.	Ast. Cat.	Result employed.
a	6	2*h*.14*m*.20*s*.84	21*s*.54		21*s*.19	*a'*	—11°29′35″.0	39″.9		37 .4
b	4	3 8 13 67	13 .49	13*s*.21	13 .42	*b'*	9 24 24 .6	25 .4	23″.8	25 .8
c	8	3 30 31 31	31 .67	13 .42	31 .67	*c'*	8 0 10 .4	13 .5	25 .8	12 .5
d	7	3 30 49 87	50 .70	Pond.	50 .26	*d'*	7 54 25 .1	30 .8	Pond.	28 .9
e	8.9	3 34	29 .06		29 .06	*e'*	7 45	2 .4		2 .4
				Loomis.					Loomis.	
f	9	3 35		30 .24	30 .24	*f'*	7 59		59 .4	59 .4
g	6	4 12 56 96			56 .96	*g'*	6 37 26 .6			26 .6
h	8	4 13 49 57	49 .99		49 .85	*h'*	6 26 59 .2	56 .0		57 .1
i	6.7	4 13 57 34			57 .34	*i'*	6 39 48 .4			48 .4
k	8	4 23 17 56	18 .11		17 .93	*k'*	5 18 23 .4	21 .2		21 .9
l	8	4 23 28 84	29 .45		29 .25	*l'*	5 12 1 .2	1 .0		1 .1
m	8	4 24 37 06	37 .64		37 .45	*m'*	5 22 35 .8	40 .7		39 .1

The places given below, in columns fifth and sixth, are corrected for refraction, parallax and aberration, and the last two columns exhibit the corrections of the ephemeris, computed from Mr. Walker's fourth parabolic elements.

Date.	Differences observed.	Sidereal Time.	No. of Obs.	Comet's Places. A. R.	Comet's Places. Dec.	Correction of Ephemeris. A. R.	Correction of Ephemeris. Dec.
1843, March 11,	*a*—Comet = 30*m*.29*s*.	6*h*.53*m*.57*s*.	4	1*h*.43*m*.51*s*.			
	a'—Comet = 5′ 50″.	"	4		—11°35′10″.		
March 21,	Comet—*b* = 3*m*. 9*s*.19	7 58 12 .27	7	3 11 27 .27		—5*s*.21	
	Comet—*b'* = 31′ 29″.6	"	7		8 52 31 .9		—15″.9
March 25,	Comet—*c* = 4*m*.49*s*.06	8 4 21 .53	5	3 35 23 .67		—1 .92	
	Comet—*d* = 4 30 .25	"	6	" 23 .27			
	Comet—*e* = 52 .38	"	5	" 23 .95			
	f—Comet = 9 .61	"	4	" 22 .92			
	Comet—*c'* = 11′ 59″.9	"	5		7 47 58 .7		—21 .9
	e'—Comet = 3 13 .3	"	4		" 65 .1		
	Comet—*f'* = 12 19 .8	"	3		" 25 .6		
April 1,	*g*—Comet = 4*m*.59*s*.54	8 42 33 .18	6	4 8 1 .21		+1 .86	
	h—Comet = 5 51 .92	"	6	" 1 .06			
	i—Comet = 6 0 .25	"	6	" 1 .00			
	Comet—*g'* = 26′ 26″.4	"	6		6 10 38 .4		—33 .0
	Comet—*i'* = 28 39 .9	"	6		" 45 .7		
April 5,	*k*—Comet = 0*m*.17*s*.36	9 21 52 .57	5	4 23 2 .41		+6 .93	
	l—Comet = 28 .66	"	5	" 2 .14			
	m—Comet = 1 38 .88	"	4	" 0 .62			
	k'—Comet = 5′ 35″.8	"	2		5 23 50 .0		+ 8 .3
	l'—Comet = 11 49 .8	"	3		" 45 .3		
	m'—Comet = 1 10 .8	"	2		" 40 .9		
April 6,	Comet—*k* = 3*m*. 5*s*.64	9 8 15 .31	5	4 26 25 .77		+9 .46	
	Comet—*l* = 2 54 .73	"	5	" 26 .01			
	Comet—*m* = 1 45 .55	"	6	" 25 .31			
	l'—Comet = 1′ 8″.6	"	4		5 12 60 .6		+34 .2
	Comet—*m'* = 9 41 .1	"	4		" 46 .9		

I have been intending to compute the most probable orbit of this comet from a comparison of all the observations. During the last half of March, the comet was followed at nearly all the European observatories; but before the middle of the month, very few accurate observations were made. It was observed at Trevandrum from the 6th of March, and at the Cape of Good Hope from the 3d. These last observations (if they possess any thing of the accuracy which may be anticipated from the character of the observer,) are indispensable to the computation of the final orbit, and I have been waiting hitherto for their publication. As soon as I receive them, I hope to find leisure to investigate the orbit which satisfies, in the best possible manner, all the published observations.

3. *The Mauvais Comet.*

This comet was observed from July 30, 1843, to October 1, twenty-five times. The observations, for the most part, were made in the usual way, with the equatorial, but in a few instances, it was observed in the transit instrument. These observations, however, are considered to be inferior to the former, for the comet would bear no illumination. The following are the places of the stars employed in this series of observations.

	RIGHT ASCENSIONS.								DECLINATIONS.						
	Mag'e.	Lalande.	Bessel.	Piazzi.	Rumker.	Loomis.	Mean employed.		Lalande.	Bessel.	Piazzi.	Rumker.	Loomis.	Mean employed.
a	7.8	23*h*. 0*m*.31*s*.14				31*s*.26	31*s*.20	*a'*	—26°40′ 9″.8				15″.2	9″.8
b	6	1 19 .34				19 .55	19 .44	*b'*	28 55 50 .2				49 .4	50 .2
c	8	7 0 .31				0 .09	0 .20	*c'*	25 41 55 .7					55 .7
d	9	7				21 .25	21 .25	*d'*	28 1				28 .0	28 .0
e	7	8 12 .54				11 .97	12 .35	*e'*	24 4 14 .6				13 .5	14 .6
f	7	8 9 .61				9 .04	9 .61	*f'*	27 55 40 .9				35 .9	40 .9
g	9	10 6 .30					6 .30	*g'*	25 51 3 .8					3 .8
h	8	14 34 .39				34 .74	34 .51	*h'*	24 17 54 .3				61 .4	54 .3
			Argelander.			Ast. Cat.				Argelander.			Ast. Cat.	
i	7	24 8 .54	8*s*.46	8 .61	8 .07	8 .45	8 .43	*i'*	12 24 6 .7	7″.4	4″.5	8″.6	4 .9	6 .4
k	6.7	24 21 .32	22 .22		21 .83	21 .49	21 .82	*k'*	11 51 22 .3	26 .9		25 .0	27 .3	25 .6
l	8	25 9 .06	10 .07			9 .42	9 .52	*l'*	13 27 59 .5	63 .9			60 .1	62 .4
m	8	27	24 .69			25 .28	24 .69	*m'*	11 24	52 .7			55 .6	52 .7
n	7.8	27 57 .95	58 .57			58 .18	58 .32	*n'*	9 37 25 .7	31 .2			39 .0	29 .4
o	8	29 40 .28	40 .09				40 .15	*o'*	10 49 58 .7	67 .9			73 .0	64 .8
p	8	31 49 .87	50 .00		49 .93	49 .97	49 .93	*p'*	— 6 24 25 .0	27 .5		29 .1		27 .6
q	4.5*	31 55 .25	56 .19	56 .10		56 .19	56 .19	*q'*	+ 4 46 79 .6	65 .7	51 .7		55 .1	55 .1
						Pond.							Pond.	
r	6	38 26 .29	26 .41	25 .53	25 .89	26 .28	26 .28	*r'*	+ 2 37 27 .2	22 .1	27 .7	20 .4	23 .7	23 .7
s	8	39 38 .60				38 .68	38 .60	*s'*	— 5 19 31 .2				38 .6	31 .2
t	9	40	45 .76				45 .76	*t'*	— 5 18	1 .0				1 .0
u	8	41 7 .96	8 .41		7 .87	7 .33	8 .10	*u'*	+ 5 30 59 .2	59 .0		56 .9		59 .1
v	7	43 43 .17	42 .85			42 .05	42 .96	*v'*	+ 3 49 48 .3	49 .0			51 .2	48 .7
w	7	43 55 .66	55 .85			56 .15	55 .79	*w'*	+ 3 52 44 .4	42 .4			44 .6	43 .1

The comet's places given below are corrected like the former observations.

* This star (ι Piscium,) according to Piazzi, has a proper motion of + 0″.30 in A. R., and — 0″.55 in Dec.

Date.	Differences observed.	Sidereal Time.	No. of Obs	Comet's Places. A. R.	Dec.
1843, July 30,	Transit $\left\{\begin{array}{l}\text{circle}\end{array}\right.$ $23^h.38^m.57^s.21$	$23^h.41^m.11^s.96$	1	$23^h.38^m.57^s.17$	
	$+5°\ 18'\ 55''.0$	"	1		$+5°18'44''.1$
	u—Comet = $2^m.\ 9^s.25$	0 15 16 .96	2	23 38 58 .86	
	u'—Comet = $12'\ 59''.0$	"	2		5 17 48 .9
July 31,	Comet—q = $6^m.58^s.33$	18 31 44 .98	7	23 38 54 .10	
	Comet—q' = $1'\ 1''.0$	18 46 8 .32	4		4 47 45 .7
August 1,	v—Comet = $4^m.56^s.92$	18 44 18 .61	8	23 38 45 .34	
	w—Comet = 5 9 .92	"	8	23 38 45 .12	
	Comet—w' = $17'\ 24''.9$	"	8		4 9 59 .3
	Comet—v' = 20 12 .6	"	8		4 9 52 .9
August 2,	v—Comet = $5^m.\ 7^s.83$	18 38 20 .68	8	23 38 35 .14	
	w—Comet = 5 20 .58	"	8	23 38 35 .29	
	v'—Comet = $18'\ 37''.6$	18 42 8 .15	7		3 30 57 .9
	w'—Comet = 21 33 .2	"	7		3 30 56 .2
August 3,	r—Comet = $0^m.\ 3^s.99$	19 1 45 .71	20	23 38 21 .67	
	Comet—r' = $13'\ 38''.3$	19 21 46 .09	10		2 50 52 .1
August 5,	Transit $\left\{\begin{array}{l}\text{circle}\end{array}\right.$ $23^h.37^m.51^s.69$	23 37 51 .47	1	23 37 51 .58	
	$+1°\ 24'\ 20''.8$	"	1		1 24 9 .7
August 6,	Transit $\left\{\begin{array}{l}\text{circle}\end{array}\right.$ $23^h.37^m.33^s.93$	23 37 33 .76	1	23 37 33 .81	
	$+0°\ 44'\ 16''.8$	"	1		+0 44 5 .6
August 15,	s—Comet = $5^m.55^s.1$	19 6 51 .92	5	23 33 42 .97	
	t—Comet = 7 1 .5	19 11 35 .90	4	23 33 43 .74	
	s'—Comet = $0'\ 21''.1$	19 16 28 .73	3		—5 20 3 .9
	t'—Comet = 1 53 .6	"	3		5 20 6 .4
August 16,	Comet—p = $1^m.19^s.51$	19 38 8 .38	4	23 33 8 .66	
	Comet—p' = 22 4 .2	"	4		6 2 32 .9
August 21,	Comet—n = $2^m.\ 0^s.3$	0 27 7 .39	5	23 29 58 .45	
	Comet—n' = $1'\ 27''.6$	"	5		9 36 12 .6
August 23,	o—Comet = $56^s.88$	20 49 11 .40	10	23 28 42 .75	
	o'—Comet = $47''.2$	"	10		10 51 3 .0
August 24,	Comet—m = $38^s.05$	20 20 35 .38	5	23 28 2 .22	
	m'—Comet = $4'\ 49''.8$	"	5		11 29 53 .8
August 25,	Comet—k = $2^m.51^s.94$	22 36 23 .68	4	23 27 13 .41	
	k'—Comet = $22'\ 52''.8$	22 30 53 .72	5		12 14 30 .1
August 26,	Comet—i = $2^m.25^s.67$	21 6 37 .52	6	23 26 33 .72	
	i'—Comet = $26'\ 42''.6$	"	6		12 51 1 .3
August 27,	Comet—l = $40^s.21$	21 37 8 .54	12	23 25 49 .26	
	l'—Comet = $2'\ 18''.4$	"	12		13 30 31 .2
September 16,	Comet—e = $2^m.36^s.52$	21 3 13 .80	10	23 10 48 .53	
	e'—Comet = $14'\ 42''.5$	"	10		24 19 6 .6
September 17,	h—Comet = $4^m.25^s.8$	20 51 59. 99	5	23 10 8 .54	
	h'—Comet = $24'\ 53''.4$	"	5		24 42 59 .2
September 19,	Comet—c = $1^m.48^s.53$	21 40 21 .60	5	23 8 48 .22	
	g—Comet = 1 16 .34	21 28 17 .91	8	23 8 49 .36	
	Comet—c' = $10'\ 44''.1$	21 40 21 .60	5		25 31 16 .3
	Comet—g' = 19 52 .2	21 28 17 .91	8		25 31 14 .8
September 20,	g—Comet = $1^m.52^s.74$	20 45 21 .95	10	23 8 13 .10	
	g'—Comet = $2'\ 7''.7$	"	10		25 53 18 .3
September 21,	g—Comet = $2^m.30^s.2$	21 18 39 .33	5	23 7 35 .90	
	g'—Comet = $24'\ 37''.4$	"	5		26 15 51 .5
September 22,	Comet—a = $6^m.30^s.2$	21 38 37 .00	5	23 7 0. 96	
	Comet—a' = $2'\ 28''.1$	"	5		26 37 46 .9
September 23,	Comet—a = $5^m.52^s.83$	21 46 10 .48	6	23 6 23 .75	
	a'—Comet = $17'\ 31''.8$	"	6		26 57 49 .8
September 27,	d—Comet = $3^m.\ 4^s.67$	22 0 46 .82	6	23 4 16 .29	
	f—Comet = 3 53 .07	"	6	23 4 16 .29	
	d'—Comet = $12'\ 18''.9$	22 4 7 .70	5		28 13 53 .4
	f'—Comet = 17 55 .2	"	5		28 13 43 .6
September 29,	Comet—b = $2^m.\ 3^s.05$	22 47 25 .26	10	23 3 22 .21	
	Comet—b' = $7'\ 31''.3$	22 48 12 .48	9		28 48 21 .8
October 1,	Comet—b = $1^m.\ 8^s.4$	1 8 24 .58	7	23 2 27 .25	
	b'—Comet = $25'\ 1''.8$	"	7		29 21 3 .1

4. *The Faye Comet.*

I was absent from Hudson at the time the news of the discovery of this comet first reached this country, and had no opportunity to observe it until January 23, 1844. Then followed a succession of cloudy days, which, with the moon, prevented observations until February 10, when it was observed, although with some difficulty. The following evening I saw it again, but found it so extremely faint that I concluded to follow it no farther. The following are the stars of comparison employed.

	RIGHT ASCENSION.							DECLINATION.						
	Mag'e.	Lalande.	Bessel.	Rumker.	Pond.	Loomis.	Result.		Lalande.	Bessel.	Rumker.	Pond.	Loomis.	Result
a	8.9	5*h*.12*m*.50*s*.58	50*s*.44	50*s*.12			50*s*.34	*a'*	+4°18′ 57″.62	49″.95	52″.59			52″.54
b	2	5 16			48*s*.12		48 .12	*b'*	6 12			8″.99		8 .99
c	9	5 26				25*s*.±1*s*.	25 .00	*c'*	6 26				48″±20″	48

The following observations are arranged in the usual manner.

Date.	Differences observed.	Sidereal Time.	No. of Obs.	Comet's Places. A. R.	Dec.
1844, Jan. 23,	*a*—Comet = 18*s*.38	3*h*.48*m*.29*s*.32	7	5*h*.12*m*.32*s*.00	
	Comet—*a'* =16′ 9″.2	"	7		+4°35′ 6″.8
February 10,	Comet—*b* = 8*m*.51*s*.00	5 52 32 .72	3	5 25 39 .60	
	c—Comet = 47 .47	"	3		
	Comet—*b'* =22′ 6″.4	"	3		6 34 23 .0
	Comet—*c'* = 7 46 .2	"	3		
February 11,	Comet—*c* = 8*s*.	5 56	1	5 26 33 .48	

The present paper concludes my astronomical labours at Hudson, having resigned the observatory into the hands of Professor James Nooney, from whose zeal and ability much may be expected in the cause of science.